



RABIES CAUSED BY A 2 ½ MONTH OLD PET PUP BITE IN MANDI DISTRICT OF HIMACHAL PRADESH INDIA

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ABSTRACT Rabies is most dreaded infectious disease and is invariably fatal once symptoms appear. A 37 years old female presented with symptoms of hydrophobia in causality department of Indira Gandhi Medical College (IGMC) Shimla on June 9, 2018. She suffered a dot puncture wound through canine of a pet pup while feeding. The dot puncture wound was neither washed with soap and water nor was any antiseptic applied. The patient did not go for Post Exposure Prophylaxis (PEP) thinking that a small dot puncture wound by a healthy puppy is no risk for rabies. After one and half month the patient started having fear of water and was referred to IGMC, where she succumbed to suspected rabies after three days. The husband of the patient had initially consulted a vet who advised to vaccinate the pup at three months of age. This is the sixth death due to pup bite or abrasions investigated by the authors in Himachal Pradesh in last eight years. People should vaccinate pups before they bring them home and vets need not refuse rabies vaccination even if the pup is below three months of age in rabies endemic countries like India to save lives.

KEYWORDS : Rabies, Pup bite, Pup Vaccination, Post Exposure Prophylaxis.

INTRODUCTION:

Rabies is most dreaded infectious disease and is invariably fatal once symptoms appear. The current estimates suggest that approximately 60,000 human deaths occur each year globally and the burden of disease being primarily borne in Asia and Africa, especially in rural areas^[1]. Dogs are the most important reservoir for rabies viruses and dog bites account for >99% of human cases^[2]. Rabies can be prevented if timely prophylaxis is given to the bite victims in the form of rabies vaccine and Rabies immunoglobulin (RIG) injection into the bite wounds^[3,4]. Even scratches or abrasions^[5] by unvaccinated pups/ pet dogs^[6] can be fatal and should not be ignored^[7].

DESCRIPTION:

A 37 years old female presented with symptoms of hydrophobia in causality department of IGMC Shimla on June 9, 2018 and was suspected to be having rabies. She was admitted in medicine ward. She was bitten by a suspected rabid dog and had suffered a small puncture wound of the size of a dot with a drop of blood oozing out, probably with the canine of the pup, on dorsum of the left hand. The wound was neither washed with soap and water nor was any antiseptic applied. The patient did not go for Anti-Rabies vaccination even though the Primary Health Centre (PHC) was just 15 kilometers away, thinking that a small dot wound by a healthy puppy is no risk for rabies. Later, after few days, when the pup started showing aggressive behavior, biting anything in-discriminatory, the pup was killed by the owner. After one and half month of dot bite wound, the patient started having fear of water and was taken to the nearby PHC. The doctor in PHC referred the patient to district Hospital at Mandi and then the patient was further referred to IGMC. The symptoms of Hydrophobia, aerophobia was present. Laryngeal spasm was evident at times. Altered sensorium and self talk was present. The patient appeared to be anxious but wanted to be given food and water. She had Blood Pressure 110/70 of Hg, pulse 130/minute and normal blood sugar. Pupils were bilaterally reacting to light. No fever, no chest pain, no abnormal movements or tremors and no neck rigidity was present and Kernig Sign was negative. No loose stool or vomiting or pain abdomen was reported. The patient had palliative management as per WHO guidelines^[8] but succumbed to suspected rabies after three days.

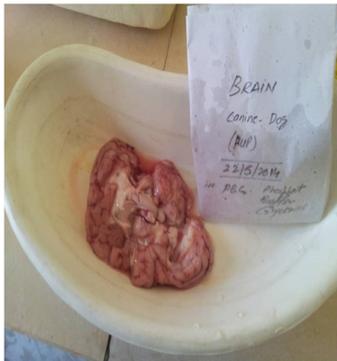
DISCUSSION:

This is the sixth death due to pup bite or abrasions investigated by the

authors in small state of Himachal Pradesh in last eight years. All of these deaths occurred as the patients did not go for Post Exposure Prophylaxis (PEP) except in one case of a tourist who was vaccinated but not given Rabies Immunoglobulins (RIG) and died later. Similar deaths due to pup bites have been reported from Nepal as well^[9]. Many people who take their pups for rabies vaccination to veterinary hospitals are refused vaccination by the veterinary doctors, who contend that the pups need no rabies vaccination below three months as maternal antibodies interfere with the vaccine and the immune system of pups is immature to develop antibodies. This is contrary to advice world over for rabies endemic countries. In actual practice pups were found to be rabid before three months (Figure 1) in Shimla Municipality in Himachal Pradesh or even in Nigeria^[10]. In fact, there was no statistical difference in GMTs between dogs vaccinated <12 weeks and dogs vaccinated 12±16 weeks^[11]. In another study it was found that only 26% of puppies (#3 months of age) had >0.5 IU/ of antibody/ml at D0. The majority of these puppies were born of immunized bitches. Despite the presence of maternal antibodies, puppies and young dogs responded to vaccination. No statistical difference was observed in the levels of antibodies to rabies in puppies at months 7, 12, and 13, regardless of the presence of maternal antibodies at D0. Maternal antibodies did not hamper a rapid antibody response shortly after vaccination (1 month)^[12]. Recent WHO TRS 1012 report^[8] advocates that, "studies in South Africa, Tunisia and the United Republic of Tanzania indicate that young pups (< 3 months of age) mount an effective immune response when given a high-quality vaccine, with no adverse effects. Owners and vaccination teams should therefore be aware that puppies, including newborns, should also be vaccinated to ensure adequate population coverage, even though this may represent off-label use (of rabies vaccine)". On the basis of results of the another study^[13], and in view of the risk of human beings contracting rabies from young puppies like in our study, all dogs in rabies endemic regions, including puppies less than three months of age, should be vaccinated against rabies as also recommended by the WHO. A study from Nigeria^[1] observes that "Occurrence of rabies in puppies of five to ten weeks, within which they are acquired and owned by other unsuspecting members of the public, is of grave public health consequences. People who love puppies, especially children who are fond of carrying and playing with them, are also faced with the risk of exposure to rabies. Consequently, review of the existing dog antirabies vaccination schedule at twelve weeks of age in Nigeria is

recommended to ensure effective immunization of this age group of dogs and for the overall safety of the vulnerable members of the public", we have given similar recommendation in India^[7]. Popular assumption that bites or scratches by one or two month old pup cannot be fatal and cannot transmit rabies need to be annulled by mass awareness campaigns through radio and newspapers. Also provision of free PEP can increase compliance^[7] and help save lives. Finally we recommend that whenever a puppy is brought home, even if below three months, it should be vaccinated against rabies and then at three months and then yearly^[7]. Even pet vaccinated dogs pose a risk of rabies in rabies endemic countries if PEP is not sought after their bite at home since about 20 per cent of vaccinated dogs can still carry the rabies virus.

Figure 1: Brain sample of a pup of age 2 ½ month old found Positive for Fluorescent Antibody Test (FAT). The pup was found dead in Shimla city.



Declaration of patient Consent: Written consent to report has been taken explicitly from the husband of the patient.

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Conflict of Interest: None

REFERENCES:

- Hampson K, Coudeville L, Lembo T, Sambo M, Kieffer A, Attlan M, et al. Estimating the global burden of endemic canine rabies. *PLoS Negl Trop Dis* 2015; <https://www.ncbi.nlm.nih.gov/pubmed/25881058?dopt=Abstract>
- Fooks AR, Cliquet F, Finke S, Freuling C, Hemachudha T, Mani RS et.al.; Rabies; *Nature Reviews Disease, Primers volume 3*, (2017); <https://www.nature.com/articles/nrdp201791#rightslink>
- Bharti OK, Madhusudana SN, Gaunta PL, Belludi AY. Local infiltration of rabies immunoglobulins without systemic intramuscular administration: an alternative cost effective approach for passive immunization against rabies. *Hum Vaccin Immunother*. 2016; <https://www.ncbi.nlm.nih.gov/pubmed/26317441>
- Bharti OK, Madhusudana SN, Wilde H. Injecting rabies immunoglobulin (RIG) into wounds only: a significant saving of lives and costly RIG. *Hum Vaccin Immunother*. 2017; <https://www.ncbi.nlm.nih.gov/pubmed/28277089>
- Bharti OK, Chand R, Chauhan A, Rao R, Sharma H, Phull A. "Scratches/Abrasions without bleeding" cause rabies: A 7 years rabies death review from medical college Shimla, Himachal Pradesh, India. *Indian J Community Med* 2017;42:248-9. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5682730/>
- Umesh Isalkar, Soldier dies of rabies 11 years after scratch from pet dog; *TNN* | Updated: Jun 15, 2017; <https://timesofindia.indiatimes.com/city/pune/soldier-dies-of-rabies-11-years-after-scratch-from-pet-dog/articleshow/59153642.cms>
- Bharti OK, V. Ramachandran, S. Kumar and A. Phull, "Pup Vaccination Practices in India Leave People to the Risk of Rabies — Lessons from Investigation of Rabies Deaths Due to Scratch/Bite by Pups in Remote Hilly Villages of Himachal Pradesh, India," *World Journal of Vaccines*. 2014, doi: 10.4236/wjv.2014.41002.
- Dr B. Abela-Ridder/Neglected Zoonotic Diseases; WHO Expert Consultation on Rabies: WHO TRS N°1012 Third report; http://www.who.int/rabies/resources/who_trs_1012/en/
- Yadav RS, Bhatt YP, Shrestha S; Public demand of anti-rabies vaccination prophylaxis for contacts of two rabies victims; *Journal of Institute of Medicine*, April, 2018, 40:1, 125-127. <http://www.jiom.com.np/index.php/jiomjournal/article/view/1019/967>
- Aliyu TB, De, N., Yenda, E.N. And Lynn, M.; Prevalence of Rabies Virus Antigens in Apparently Healthy Dogs in Yola, Nigeria; *Researcher* 2010(2)2: http://www.sciencepub.net/researcher/research0202/01_2213_Rabies_pub_research0202_1_14.pdf
- Wallace RM, Pees A, Blanton JB, Moore SM (2017) Risk factors for inadequate antibody response to primary rabies vaccination in dogs under one year of age. *PLoS Negl Trop Dis*. <http://journals.plos.org/plosntds/article?id=10.1371/journal.pntd.0005761>
- Seghaier C, Cliquet F, Hammami S, Aouina T, Tlatli A, Aubert M; "Rabies Mass Vaccination Campaigns in Tunisia: Are Vaccinated Dogs Correctly Immunized?" *American Journal of Tropical Medicine and Hygiene*, Vol. 61, 1999, pp. 879-884. <http://www.ajtmh.org/content/journals/10.4269/ajtmh.1999.61.879>
- Morters, MK., McNabb, S., Horton, DL., Fooks, AR., Schoeman, JP et. al. (2015) Effective vaccination against rabies in puppies in rabies endemic regions *Veterinary Record* 177, 150. <http://veterinaryrecord.bmj.com/content/177/6/150>
- Nanven Abraham Maurice, Pam Dachung Luka, Magdalene Nanven Maurice, Emmanuel Ochehije Ngebde, Ponfa Nden Zhakom, Philip Paul Mshelwala et. al; Rabies In A Set Of Eight-Week Old Puppies In Nigeria: The Need For Review Of Current Dog Antirabies Vaccination Schedule; *African Journal of Infectious Diseases* 12(2):72-77; <http://journals.sfu.ca/africanem/index.php/AJID/article/view/5118>
- Bharti OK, Damme W, Decoster K, Isaakidis P, Appelmans A, Ramachandran V et al,

"Breaking the Barriers to Access a Low Cost Intra-Dermal Rabies Vaccine Through Innovative "Pooling Strategy"," *World Journal of Vaccines*; doi: 10.4236/wjv.2012.23016.

- Stephen Chen ; *South China Morning Post*; Feb 2017; <https://www.scmp.com/news/china/society/article/2070197/town-southwest-china-culls-all-dogs-after-woman-dies-rabies>